

Case Study

Neonatal Group B Strep Infections in Community Setting

Situation

A rural hospital is investigating a recent neonatal death related to Group B Strep (GBS) infection.

- Uncomplicated pregnancy/home delivery
- Mother was not screened for GBS during pregnancy
- Baby presented to the ED 36 hrs after delivery with high fevers and seizures, found to have GBS meningitis
- Died the following day in the NICU

Group B Strep (GBS) in Neonates

- Neonatal GBS infection has 2% mortality rate
- Approximately 20% of women have GBS colonization
- 1 in 200 babies born to colonized mothers will become infected
- Risk increases to 1 in 20 when additional risk factors are present
- Antibiotics during labor reduces risk to 1 in 20,000
- GBS screening recommended for all pregnant women

Situation (Cont)

Over the past 5 years, the hospital has treated 2 other neonatal GBS infections from the same rural region

- This is a much higher rate than expected for the population size
- The majority of births in the region are home births attended by Alice, the only midwife in the region
- None of the mothers received GBS prophylaxis, even when risk factors were present

Midwife Qualifications

- Trained through an informal apprenticeship
- 12 years experience delivering babies
- Able to provide some limited interventions such as O2 or IV fluids in an emergency

Setting Behavioral Objectives

You have reached out to Alice who confirmed that she does not recommend GBS screening or prophylaxis to her clients.

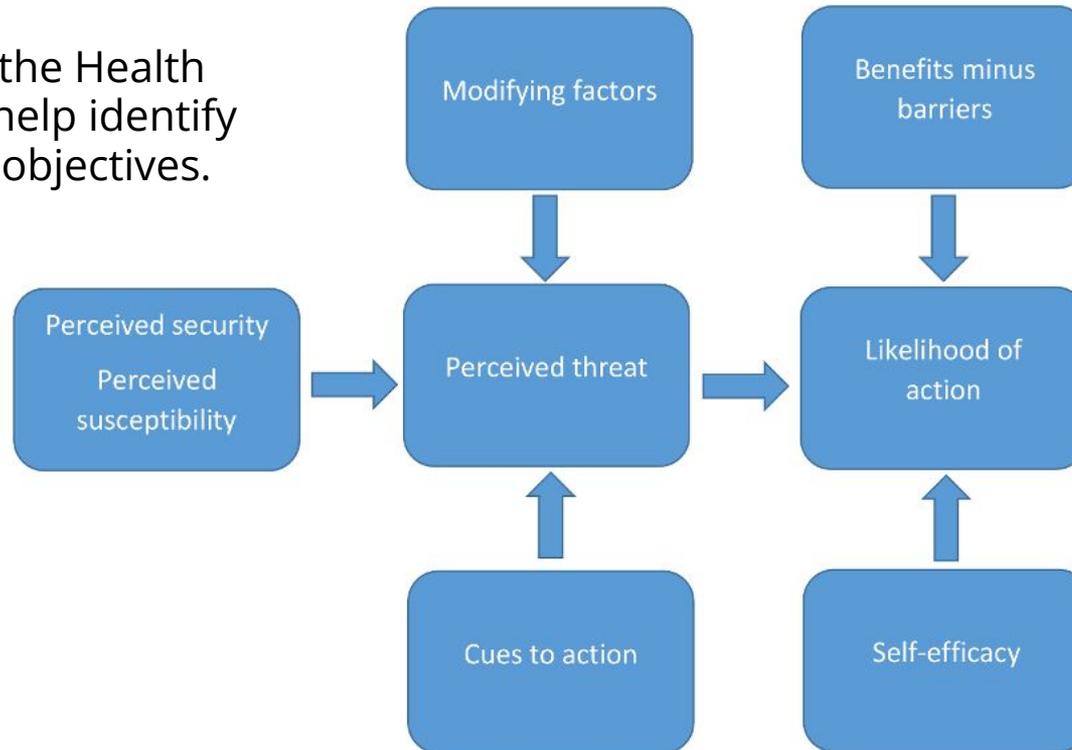
Alice has agreed to a discussion. What are some realistic, measurable goals or behavioral objectives?

Behavioral Objectives:

- Within 90 days, 75% of pregnant women in the community will receive education on GBS risks
- Within 90 days, at least 50% of high-risk mothers will receive antibiotic prophylaxis
- Within 1 year, the rate of neonatal GBS infection will be reduced by at least 50%

Health Belief Model

You plan to use the Health Belief Model to help identify barriers to your objectives.



Likelihood of Action

Factors that make change more or less likely to occur:



Perceived Threat: Risk of Neonatal GBS

The degree which a problem is perceived as a threat is influenced by:

Modifying Factors

Demographic
characteristics and
beliefs

Perceived Susceptibility

The perceived
likelihood of harm

Cues to Action

Events that heighten
awareness and
motivation

Modifying factors

Modifying factors are the underlying characteristics of the individual or population that influence choices and learning. Examples include:

- Socioeconomic factors
- Cultural factors
- Religious beliefs
- Access to care

Community Characteristics

- Non-denominational Fundamentalist Christian beliefs
- Distrust of government and medical establishment
- Low-income, uninsured
- Closest hospital an hour away
- Preference for natural remedies
- Conventional health care usually a last resort

Perceived Security and Susceptibility

Start by asking questions

Alice is familiar with the risks of neonatal GBS infection. She believes a combination of probiotics and apple cider vinegar baths in the weeks leading up to the delivery is a safe, effective alternative to antibiotics and recommends it to all her clients.

*Are
neonatal
GBS
infections a
serious risk?*

*What's the
best way to
reduce risk?*

Cues to action

- Alice is rattled and distraught by this recent death
- She also recalls the prior cases of newborn GBS infections as “horrifying ordeals”
- The death has also increased awareness and concern in the tight-knit community

**Messaging or events
that heighten
awareness and
increase motivation to
change**

Likelihood of Action

Factors that make change more or less likely to occur:

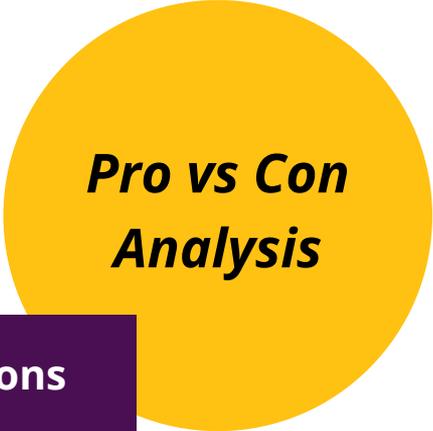


Benefits Minus Barriers

Benefit: Reduced neonatal GBS infection

Identified barriers:

- Lack of local testing/medication access
- Fear of side effects/adverse drug reactions
- Prohibitive costs
- Interferes with desire for natural birth



Pro vs Con Analysis

Potential Solutions

- Coordinate local access
- Provide accurate information regarding risks and benefits
- Identify grants and alternate funding sources
- Minimize disruption to desired birth plan

Likelihood of Action

Factors that make change more or less likely to occur:



Self-efficacy

Factors that influence ability to implement and sustain change

Midwife Strengths

- Has IV skills (occasionally gives IV fluids)
- State laws permit midwives to administer antibiotics
- Interventions are not religiously prohibited
- Cares deeply for the mothers and infants she serves

Midwife Limitations

- Distrusts conventional medicine
- Overestimates efficacy of natural remedies
- Lacks access to testing and medication

Transtheoretical Model of Change

The Health Belief Model has helped assess barriers to change.

The **Transtheoretical Model of Change**, or **Stage Theory** helps with

- Identifying a starting point
- Creating a sequential path forward

Precontemplation	"I won't"	Unaware, no desire, no reason
Contemplation	"I might"	Weighing change pros and cons
Preparation	"I will"	Making plans to change behavior
Action	"I am"	Currently adopting change
Maintenance	"I have"	Change made, avoiding relapse

Precontemplation

I won't provide GBS screening or prophylaxis

Initially Alice does not intend to alter her practices because she perceives her natural remedies to be adequate. In order to progress, you must first convince Alice that change is needed

- Make non-judgemental observations, "In most of the state, we see around 1 GBS case for every 2,000 births, but your community has seen 3 cases over the past 5 years"
- Provide information from trusted sources (professional midwives, pro-homebirth organizations)
- Listen to her perspective and concerns



I won't

Contemplation

I might provide GBS screening or prophylaxis

Alice begins to see that there may be benefits to GBS testing and/or prophylaxis for some clients. However she still needs the following reassurances

- Interventions would not interfere with home birth
- Parents who opt out of testing or treatment will not be penalized
- There are grants that will help cover the costs of testing, medications, and supplies



I might

Preparation

I will provide GBS screening and prophylaxis

Alice is willing to attempt a trial implementation. You coordinate the following resources in preparation

- Delivery of test supplies, antibiotics, anaphylaxis kit, and IV supplies
- Arrange for courier/laboratory services
- Mentoring from a licensed midwife in a neighboring community



I will

Action

I am providing GBS screening and prophylaxis

Alice now discusses GBS infection risks with each client as well as the risks and benefits of prophylactic antibiotic therapy.

- She recommends clients get screened only if they are open to prophylaxis if positive (30% of clients)
- Clients who decline screening are still advised to get prophylaxis if they have risk factors:
 - Preterm labor
 - Rupture of membranes > 18 hrs
 - Maternal fever during labor
 - Prior baby with GBS
- She continues to recommend probiotics and natural remedies but advises that they may not reduce GBS risk



I am

Maintenance

I have provided GBS screening and prophylaxis

A year later, Alice continues to provide GBS screening and prophylaxis to clients. She estimates around half of her clients opt to be screened. When risk factors are identified, 90% of clients receive antibiotics during labor. You ensure processes are in place to ensure sustainability

- Alice has been able to successfully renew her grant funding and order new medications/supplies when needed
- Alice is currently has apprentice who will be sharing her practice. The apprentice is being trained to implement the same screening/prophylaxis



I have

Thank you!
